SYNTEGRA CONSULTING

Corsham Science Park

Odour Assessment

April 2024

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1. Introduction

Background

This report has been prepared to support an application for the variation of two conditions attached to planning permission PL/2022/02531, which relates to a commercial development on at land at Corsham Science Park, south of Bradford Road, Rudloe, Wiltshire, SN13 9FU.

The variation seeks to authorise a number of changes which include the provision of three galvanised stacks and associated fans to the rear elevation of Building 5. These will serve laboratory fume cupboards within the unit.

Odour emissions from the stacks have the potential to result in impacts at sensitive locations in the vicinity of the site. As such, an Odour Assessment was undertaken in order to determine baseline conditions and evaulate potential effects.

Site Location and Context

The site is situated within Corsham Science Park, at approximate National Grid Reference (NGR): 384665, 169540. Reference should be made to Figure 1 for a map of the site and surrounding area.

An application to vary of Conditions 1 and 2 which are attached to planning permission PL/2022/02531 has been submitted to Wiltshire Council (WC). The variation seeks to authorise a number of changes which include the provision of three galvanised stacks and associated fans to the rear elevation of Building 5. These will serve laboratory fume cupboards within the unit.

There may be the potential for odour emissions from the stacks as a result of solvent use within the laboratories during normal operation. These have the potential to cause impacts at sensitive locations within the vicinity of the site. As such, an Odour Assessment has been undertaken in order to determine baseline conditions and evaulate potential effects. This is detailed in the following report.

2. Legislation and Policy

Odour Definition

The Institute of Air Quality Management (IAQM) guidance[1] defines odour as:

> *"[…] the human olfactory response (perception followed by psychological appraisal) to one, or more often a complex mixture of, chemical species in the air."*

The stated definition is considered to be relevant in the context of this assessment.

Odour Impacts

The magnitude of odour impact depends on a number of factors and the potential for complaints varies due to the subjective nature of odour perception. The **FIDOL** acronym (also stated as **FIDOR** in Environment Agency (EA) guidance[2] is a useful reminder of the factors that will determine the degree of odour pollution. These are described by the IAQM[3] as follows:

- **F**requency - how often an individual is exposed to odour;
- **I**ntensity - the individual's perception of the strength of the odour;
- **D**uration - The overall duration that individuals are exposed to an odour over time;
- **O**dour unpleasantness - Odour unpleasantness describes the character of an odour as it relates to the 'hedonic tone' (which may be pleasant, neutral or unpleasant) at a given odour concentration/ intensity. This can be measured in the laboratory as the hedonic tone, and when measured by the standard method and expressed on a standard nine-point scale it is termed the hedonic score; and,
- **L**ocation - The type of land use and nature of human activities in the vicinity of an odour source. Tolerance and expectation of the receptor. The 'Location' factor can be considered to encompass the receptor characteristics, receptor sensitivity, and socio-economic factors.

It is It is important to note that even infrequent emissions may cause loss of amenity if odours are perceived to be particularly intense or offensive.

The **FIDOL** factors can be further considered to provide the following issues in regards to the potential for an odour emission to cause an impact:

- The rate of emission of the compound(s);
- The duration and frequency of emissions;
- The time of the day that this emission occurs;
- The prevailing meteorology;

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1 Guidance on the Assessment of Oduor for Planning v1.1, IAQM, 2018.
2 H4: Oduor Management, EA, 2011.
3 Guidance on the Assessment of Oduor for Planning v1.1, IAQM, 2018.

- The sensitivity of receptors to the emission i.e. whether the odorous compound is more likely to cause an impact, such as the sick or elderly, who may be more sensitive;
- The odour detection capacity of individuals to the various compound(s); and,
- The individual perception of the odour (i.e. whether the odour is regarded as unpleasant). This is greatly subjective, and may vary significantly from individual to individual. For example, some individuals may consider some odours as pleasant, such as petrol, paint and creosote.

Odour Legislative Control

The main requirement with respect to odour control from industrial activities is the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments. If a process is deemed potentially odorous then the relevant regulator will usually include an appropriate condition in the site's Environmental Permit to restrict impacts beyond the facility boundary.

Enforcement of the condition is by the relevant regulator, either the EA for Part A(1) and waste processes, or the Local Authority for Part A(2) and B processes. If the regulator is satisfied that odour from a facility is causing pollution beyond the site boundary, then they can serve an improvement notice that requires remedial works to be undertaken to reduce impacts to an acceptable level. The measures that are deemed appropriate will depend on the industry sector and site-specific circumstances and will take costs and benefits into account. Should appropriate actions not be taken by the operator then the regulator has a number of available options, cumulating in the revocation of the Environmental Permit and cessation of all activities on site.

The main requirement with respect to odour control from premises not controlled under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

> *"Any dust, steam, odour or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance."*

Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the Local Authority is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

The legislative controls described above were considered as necessary throughout the undertaking of this assessment.

Odour Benchmark Levels

There is no statutory limit in the UK for ambient odour concentrations, whether set for individual chemical species or for mixtures. However, the EA has issued guidance[4] on odour which contains indicative benchmark levels for use in the assessment of potential impacts from facilities

[4] H4: Odour Management, EA, 2011.

regulatedunder the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments.

Benchmark levels are stated as the 98th percentile (%ile) of hourly mean concentrations in European odour units (ou_E) over a year for odours of different offensiveness. In practice this is the 175th highest hourly average recorded in the year. This parameter reflects the previously described **FIDOR** factors, where an odour is likely to be noted on several occasions above a particular threshold concentration before an annoyance occurs. EA odour benchmark levels are summarised in Table 1.

Table 1 Odour Benchmark Levels

Relative Offensiveness of Odour	Benchmark Level as 98th %ile of 1-hour Means (ou_E/m^3)
Most offensive odours: • Processes involving decaying animal or fish • Processes involving septic effluent or sludge • Biological landfill odours	1.5
Moderately offensive odours: • Intensive livestock rearing • Fat frying (food processing) • Sugar beet processing • Well aerated green waste composting	3.0
Less offensive odours: • Brewery • Confectionery • Coffee roasting • Bakery	6.0

EA H4[5] guidance states that 'moderately offensive' odours are those which do not obviously fall in to the 'most offensive' or 'less offensive' categories. As such, odour emissions from the laboratory would be classified as 'moderately offensive' they do not obviously fall in to either category as described in Table 1. As such, an assessment criterion of $3.0ou_E/m^3$ as the 98th %ile of 1-hour mean concentrations has been utilised throughout this report.

In order to provide some context to the odour benchmark values, the Department of Environment, Food and Rural Affairs (DEFRA) have provided the following descriptors[6]:

- $1ou_E/m^3$ is the point of detection;
- $5ou_E/m^3$ is a faint odour; and,
- $10ou_E/m^3$ is a distinct odour.

5 H4: Odour Management, EA, 2011.
6 Odour Guidance for Local Authorities, DEFRA, 2010.

An odour at a strength of $1ou_E/m^3$ is in reality so weak that it would not normally be detected outside the controlled environment of an odour laboratory by the majority of people (that is individuals with odour sensitivity in the "normal" range - approximately 96% of the population). It is important to note that these values are based on laboratory measurements and in the general environment other factors affect our sense of odour perception. These include:

- The population is continuously exposed to a wide range of background odours at a range of different concentrations, and usually people are unaware of there being any background odours at all due to normal habituation. Individuals can also develop a tolerance to background and other specific odours. In an odour laboratory the determination of detection threshold is undertaken by comparison with non-odorous air, and in carefully controlled, odour-free, conditions. Normal background odours such as those from traffic, vegetation, grass mowing etc, can provide background odour concentrations from 5 to $60ou_E/m^3$ or more[7];
- The recognition threshold may be about $3ou_E/m^3$ [8], although it might be less for offensive substances or higher if the receptor is less familiar with the odour or distracted by other stimuli; and,
- An odour which fluctuates rapidly in concentration is often more noticeable than a steady odour at a low concentration.

National Planning Policy

The revised National Planning Policy Framework[9] (NPPF) was published in December 2023 and sets out the Government's planning policies for England and how these are expected to be applied.

The purpose of the planning system is to contribute to the achievement of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives, including the following of relevance to odour:

> *"c) An environmental objective - to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy"*

Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

> *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *[…]*

7 Odour Guidance for Local Authorities, DEFRA, 2010.
8 Odour Guidance for Local Authorities, DEFRA, 2010.
9 NPPF, Ministry of Housing, Communities and Local Government, 2023.

> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality […]"*

The implications of the NPPF have been considered throughout this assessment.

Local Planning Policy

The Wiltshire Core Strategy Development Plan Document[10] was adopted by Wiltshire Council (WC) on 20th January 2015. Review of the document indicated the following policy of relevance to this assessment:

> *"Core Policy 57*
>
> *Ensuring high quality design and place shaping*
>
> *A high standard of design is required in all new developments, including extensions, alterations, and changes of use of existing buildings. Development is expected to create a strong sense of place through drawing on the local context and being complementary to the locality. Applications for new development must be accompanied by appropriate information to demonstrate how the proposal will make a positive contribution to the character of Wiltshire through:*
>
> *[…]*
>
> *vii. having regard to the compatibility of adjoining buildings and uses, the impact on the amenities of existing occupants, and ensuring that appropriate levels of amenity are achievable within the development itself, including the consideration of privacy, overshadowing, vibration, and pollution (e.g. light intrusion, noise, smoke, fumes, effluent, waste or litter) […]"*

The above policy was taken into consideration throughout the undertaking of the assessment.

Institute of Air Quality Management

The IAQM published the 'Guidance on the Assessment of Odour for Planning' on 20th May 2014. This was updated in 2018[11] and specifically deals with assessing odour impacts for planning purposes, namely potential effects on amenity. The assessment methodology outlined in the guidance has been utilised in throughout this report where relevant.

10 Wiltshire Core Strategy Development Plan Document, WC, 2015.
11 Guidance on the Assessment of Odour for Planning v1.1, IAQM, 2018.

3. Methodology

Introduction

The fume extract stacks may result in odour emissions during normal operation. Associated impacts were therefore assessed in accordance with the following stages:

- Identification of odour sources;
- Quantification of odour emission rates;
- Dispersion modelling of odour emissions; and,
- Comparison of modelling results with relevant criteria.

The following Sections outline the methodology and inputs used for the assessment.

Dispersion Model

Dispersion modelling was undertaken using ADMS-6.0 (v6.0.0.1), which is developed by Cambridge Environmental Research Consultants (CERC) Ltd. ADMS-6 is a short-range dispersion modelling software package that simulates a wide range of buoyant and passive releases to atmosphere. It is a new generation model utilising boundary layer height and Monin-Obukhov length to describe the atmospheric boundary layer and a skewed Gaussian concentration distribution to calculate dispersion under convective conditions.

The model utilises hourly meteorological data to define conditions for plume rise, transport and diffusion. It estimates the concentration for each source and receptor combination for each hour of input meteorology and calculates user-selected long-term and short-term averages.

The model requires input data that details the following parameters:

- Source and emissions data;
- Assessment area;
- Terrain information;
- Building dimensions;
- Meteorological data;
- Roughness length (z_0); and,
- Monin-Obukhov length.

These are detailed in the following Sections.

Odour Sources

Under the proposals, three separate extract stacks will be installed on the rear elevation of Building 5 to serve laboratory fume cupboards within the unit. The laboratory will utilise ethanol and isopropanol during normal operation. Emissions of these chemicals from the extract stacks have the potential to result in odour impacts at sensitive locations in the vicinity of the site and have therefore been assessed as part of the dispersion modelling. Reference should be made to Figure 2 for a map showing the location of the proposed stacks.

Process Conditions and Emissions

The inputs used to describe the emission sources within the model were provided by the Applicant. These are summarised in Table 2.

Table 2 Process Conditions and Emissions

Parameter	Unit	Stack 1	Stack 2	Stack 3
Stack location	NGR	384693, 169502	384664, 169518	384658, 169521
Stack height	m	7.8	7.8	7.8
Stack diameter	m	0.25	0.25	0.25
Exhaust gas temperature	°C	Ambient	Ambient	Ambient
Exhaust gas flow rate	m^3/s	0.29	0.29	0.29
Exhaust gas efflux velocity	m/s	5.991	5.991	5.991

There are no Emission Limit Values (ELVs) for odour and since the stacks are not operational, it was not possible to monitor site specific emissions. As such, estimations of odour emissions were made based on ethanol and isopropanol use rates for the laboratory provided by the Applicant and published detection thresholds.

The concentrations of ethanol and isopropanol within stack emissions were calculated based on the use rates of the chemicals and the volumetric flow rates shown in Table 2. The results are summarised in Table 3.

It should be noted that calculation assumed that all ethanol and isopropanol used within the laboratory will be vaporised and released to atmosphere via the extract points. This is considered to represent a worst-case assessment approach.

Table 3 ODT and Solvent Usage Rates

Parameter	Unit	Value
Ethanol use rate	g/week	500
Isopropanol use rate	g/week	500
Ethanol use rate	g/s	0.00083
Isopropanol use rate	g/s	0.00083
Stack ethanol concentration	mg/m^3	2.86
Stack isopropanol concentration	mg/m^3	2.86

The concentration of each chemical was converted to total odour using the following formula from EA guidance EA guidance H4[12]:

$$\text{Total odour concentration} = \frac{\text{concentration of specific species}}{\text{odour threshold value of specific species}}$$

It should be noted that the latest version of H4 does not include the above formula. As such, the older version was utilised as a suitable source of information for an assessment of this nature.

The odour threshold value for ethanol is stated within EA guidance H4[13] as 0.52ppm which is equivalent to 0.98mg/m^3. The odour threshold value for isopropanol is stated within H4 as 26.0ppm which is equivalent to 63.91mg/m^3. The odour emissions calculated from this data are summarised in Table 4.

Table 4 Odour Emission Rates

Parameter	Unit	Value
Ethanol emission concentration	ou_E/m^3	2.91
Isopropanol emission concentration	ou_E/m^3	0.04
Ethanol emission rate	ou_E/s	0.84
Isopropanol emission rate	ou_E/s	0.13
Total odour emission rate	ou_E/s	0.86

The total emission rate provided in Table 4 was applied to each of the three proposed extract stacks. Emissions from the stacks were assumed to be constant, 24-hours per day, 365-days per year. This is considered to be a worst-case assessment scenario as plant shutdown or periods of reduced work load are not reflected in the modelled emissions.

Modelling Scenarios

The scenarios considered in the modelling assessment are summarised in Table 5.

Table 5 Assessment Scenarios

Pollutant	Modelled As	
	Short Term	Long Term
Odour	98th %ile 1-hour mean	-

12 IPPC H4: DRAFT Horizontal Guidance for Odour Part 1 - Regulation and Permitting, EA, 2002.
13 IPPC H4: DRAFT Horizontal Guidance for Odour Part 1 – Regulation and Permitting, EA, 2002.

Assessment Area

The assessment area was defined based on the site location, anticipated pollutant dispersion patterns and the positioning of sensitive receptors. Ambient odour concentrations were predicted over NGR: 384500, 384800 to 169400, 169700. One Cartesian grid with a resolution of 10m was used within the model to produce data suitable for contour plotting using the Surfer software package.

Reference should be made to Figure 2 for a graphical representation of the assessment grid extents.

A desk-top study was undertaken in order to identify any sensitive receptor locations in the vicinity of the site that required specific consideration during the assessment. The sensitivity of each receptor was defined based upon the guidance provided within the IAQM document 'Guidance on the Assessment of Odour for Planning V1.1'[14]. The IAQM recommend that the assessor uses professional judgement to identify where on the spectrum between high and low sensitivity a receptor lies, taking into account the principles summarised in

Table 6 Odour Receptor Sensitivity

Sensitivity	Description
High	Surrounding land where: • Users can reasonably expect enjoyment of a high level of amenity; and, • People would reasonably be expected to be present here continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land Examples may include residential dwellings, hospitals, schools/ education and tourist/cultural
Medium	Surrounding land where: • Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or, • People would not reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land Examples may include places of work, commercial/retail premises and playing/recreation fields
Low	Surrounding land where: • The enjoyment of amenity would not reasonably be expected; or, • There is transient exposure, where the people would reasonably be expected to present only for limited periods of time as part of the normal pattern of use of the land Examples may include industrial use, farms, footpaths and roads

The identified sensitive receptors and associated sensitivities are summarised in Table 7.

[14] Guidance on the Assessment of Odour for Planning v1.1, IAQM, 2018.

Table 7 Sensitive Receptor Locations

Receptor		NGR (m)	
		X	Y
R1	Residential - The Links	384564.6	169448.9
R2	Residential - The Links	384528.9	169483.6
R3	Residential - Bradford Road	384527.5	169548.5
R4	Residential - Bradford Road	384539.4	169584.3
R5	Residential - Bradford Road	384563.6	169630.3
R6	Residential - Bradford Road	384601	169690.5
R7	Residential - Unnamed Road	384650.7	169652.8
R8	Residential - Monks Road	384658.9	169633.6
R9	Residential - Monks Road	384710.6	169600.8

Reference should be made to Figure 3 for a map of the sensitive receptor locations.

Building Effects

The dispersion of substances released from elevated sources can be influenced by the presence of buildings close to the emission point. Structures can interrupt the wind flows and cause significantly higher ground-level concentrations close to the source than would arise in the absence of the buildings.

Analysis of the site layout indicated that a number of buildings should be included within the model in order to take account of effects on pollutant dispersion. Input geometries are shown in Table 8.

Table 8 Building Geometries

Building	NGR (m)		Height (m)	Length/ Diameter (m)	Width (m)	Angle (°)
	X	Y				
Building 1	384599.9	169581.9	8.0	48.9	14.7	208.5
Building 2	384621.3	169620.7	8.0	36.9	14.6	208.7
Building 3	384641.9	169552.6	8.0	36.7	14.6	208.8
Building 4	384671.0	169592.8	8.0	14.6	48.9	222.3
Building 5	384672.2	169526.6	8.0	21.6	60.3	208.7

Reference should be made to Figure 2 for a graphical representation of the site layout.

Meteorological Data

Meteorological data used in the assessment was taken from Lyneham meteorological station over the period 1st January 2017 to 31st December 2021 (inclusive). Lyneham meteorological station is located at NGR: 401484, 177895, which is approximately 18.2km north-east of the facility. It is anticipated that conditions would be reasonably similar over a distance of this magnitude. The data was therefore considered suitable for an assessment of this nature.

All meteorological records used in the assessment were provided by Atmospheric Dispersion Modelling (ADM) Ltd, which is an established distributor of data within the UK. Reference should be made to Figure 4 for wind roses of the utilised meteorological data.

Roughness Length

Roughness length (z_0) is a modelling parameter applied to allow consideration of surface height roughness elements. A z_0 of 0.5m was used within the model to describe the dispersion extents. This value is considered appropriate for the morphology of the area and is suggested within ADMS-6 as being suitable for 'parkland, open suburbia'.

A z_0 of 0.3m was used within the model to describe the meteorological site. This value is considered appropriate for the nature of the area and is suggested within ADMS-6 as being suitable for 'agricultural areas (max)'.

Monin-Obukhov Length

The Monin-Obukhov length provides a measure of the stability of the atmosphere. A minimum Monin-Obukhov length of 30m was used to describe the dispersion extents. This value is considered appropriate for the nature of the area and is suggested within ADMS-6 as being suitable for 'mixed urban/industrial'.

A minimum Monin-Obukhov length of 10m was used to describe the meteorological site. This value is considered appropriate for the nature of the area and is suggested within ADMS-6 as being suitable for 'small towns < 50,000'.

Terrain Data

Ordnance Survey OS Terrain 50 data was included in the model for the site and surrounding area in order to take account of the specific flow field produced by variations in ground height throughout the assessment extents. This was pre-processed using the method suggested by CERC[15].

Model Uncertainty

Uncertainty in dispersion modelling predictions can be associated with a variety of factors, including:

[15] Note 105: Setting up Terrain Data for Input to CERC Models, CERC, 2016.

- Model uncertainty - due to model limitations;
- Data uncertainty - due to errors in input data, including emission estimates, operational procedures, land use characteristics and meteorology; and,
- Variability - randomness of measurements used.

Potential uncertainties in the model results were minimised as far as practicable and worst-case inputs used in order to provide a robust assessment. This included the following:

- Choice of model - ADMS-6 is a commonly used atmospheric dispersion model and results have been verified through a number of studies to ensure predictions are as accurate as possible;
- Meteorological data - Modelling was undertaken using five meteorological data sets from the closest observation site to the facility to take account of local conditions. The assessment was based on the worst-case year for each averaging period to ensure maximum concentrations were considered;
- Surface characteristics - The z_0 and Monin-Obukhov length were determined for both the dispersion and meteorological sites based on the surrounding land uses and guidance provided by CERC;
- Plant operating conditions - Process conditions for the plant were supplied by the Applicant. These are considered to be representative of likely operating conditions;
- Emission rates - Emission rates were derived from the chemical use rates provided by the Applicant. Emissions were assumed to be constant throughout the modelling period, which does not allow for operational shut down. This assumptions are likely to overestimate actual emissions and therefore result in a worst-case assessment;
- Receptor locations - A Cartesian Grid was included in the model in order to provide suitable data for contour plotting. Receptor points were also included at sensitive locations to provide additional consideration of these areas; and,
- Variability - All model inputs were as accurate as possible and worst-case conditions were considered as necessary in order to ensure a robust assessment of potential pollutant concentrations.

Results were considered in the context odour benchmark level and IAQM criteria. It is considered that the use of the stated measures to reduce uncertainty and the use of worst-case assumptions when necessary has resulted in model accuracy of an acceptable level.

Significance of Odour Impacts

The significance of impacts was assessed through the interaction of the predicted 98th %ile of 1-hour mean odour concentrations and receptor sensitivity, as outlined in the IAQM guidance[16]. The relevant assessment matrix is summarised in Table 9.

[16] Guidance on the Assessment of Odour for Planning, V1.1, IAQM, 2018.

Table 9 Odour Impact

Odour Exposure Level as 98th %ile of 1-hour Means (ou_E/m^3)	Receptor Sensitivity		
	Low	Medium	High
Greater than 10	Moderate	Substantial	Substantial
5 - 10	Slight	Moderate	Moderate
3 - 5	Negligible	Slight	Moderate
1.5 - 3	Negligible	Negligible	Slight
0.5 - 1.5	Negligible	Negligible	Negligible
Less than 0.5	Negligible	Negligible	Negligible

The IAQM guidance[17] states that an assessment must reach a conclusion on the likely significance of the predicted impact. Where the overall effect is **moderate** or **substantial**, the effect is likely to be considered **significant**, whilst if the effect is **slight** or **negligible**, the impact is likely to be considered **not significant**. It should be noted that this is a binary judgement of either it is **significant** or it is **not significant**. This has been considered to determine the overall significance of potential odour effects associated with the facility.

17 Guidance on the Assessment of Odour for Planning, V1.1, IAQM, 2018.

4. Assessment

Introduction

Dispersion modelling was undertaken with the inputs described in Section 4. The results are provided in the following Sections.

Predicted Odour Concentrations

Predicted odour concentrations at the discrete receptor locations are summarised in Table 10. The maximum concentration across the five years of results is highlighted in **bold**.

Table 10 Predicted Odour Concentrations

Receptor		Predicted 98th %ile 1-hour Mean Odour Concentration (ou_E/m^3)				
		2017	2018	2019	2020	2021
R1	Residential - The Links	0.0003	0.0004	0.0004	0.0004	**0.0005**
R2	Residential - The Links	0.0002	0.0003	0.0003	0.0003	**0.0003**
R3	Residential - Bradford Road	0.0002	0.0002	0.0003	0.0002	**0.0003**
R4	Residential - Bradford Road	0.0002	0.0002	**0.0002**	0.0002	0.0002
R5	Residential - Bradford Road	0.0003	0.0002	**0.0003**	0.0003	0.0002
R6	Residential - Bradford Road	0.0002	0.0003	**0.0003**	0.0003	0.0003
R7	Residential - Unnamed Road	0.0006	0.0006	**0.0007**	0.0006	0.0006
R8	Residential - Monks Road	0.0011	0.0010	**0.0012**	0.0010	0.0010
R9	Residential - Monks Road	0.0010	0.0010	0.0010	0.0010	**0.0010**

As indicated in Table 10, predicted odour concentrations were well below the EA benchmark of $3.0ou_E/m^3$ at all receptor locations for all modelling years. Concentrations were also below the more precautionary benchmark of $1.5ou_E/m^3$ in all cases.

Reference should be made to Figure 5 to 9 for graphical representations of predicted odour concentrations throughout the assessment extents.

Impact Significance

The significance of predicted odour impacts at the sensitive receptors selected to represent the development is summarised in Table 11.

Table 11 Predicted Odour Impacts

Receptor		Odour Exposure Level as 98th %ile of 1-hour Means (ouE/m3)	Receptor Sensitivity	Significance of Impact
R1	Residential - The Links	Less than 0.5	High	Negligible
R2	Residential - The Links	Less than 0.5	High	Negligible
R3	Residential - Bradford Road	Less than 0.5	High	Negligible
R4	Residential - Bradford Road	Less than 0.5	High	Negligible
R5	Residential - Bradford Road	Less than 0.5	High	Negligible
R6	Residential - Bradford Road	Less than 0.5	High	Negligible
R7	Residential - Unnamed Road	Less than 0.5	High	Negligible
R8	Residential - Monks Road	Less than 0.5	High	Negligible
R9	Residential - Monks Road	Less than 0.5	High	Negligible

As indicated in Table 11, predicted odour impacts as a result of emissions from the extract flues were predicted to be **negligible** at all receptor locations.

The IAQM guidance states that only if the impact is **moderate** or **substantial**, the effect is considered **significant**. As such, impacts are considered **not significant**, in accordance with the stated methodology.

Based on the dispersion modelling results, it is not anticipated that significant odour impacts will occur at any sensitive location as a result of emissions from the fume extract stacks.

5. Conclusion

This report has been prepared to support an application for the variation of two conditions attached to planning permission PL/2022/02531, which relates to a commercial development on at land at Corsham Science Park, south of Bradford Road, Rudloe, Wiltshire, SN13 9FU.

The variation seeks to authorise a number of changes which include the provision of three galvanised stacks and associated fans to the rear elevation of Building 5. These will serve laboratory fume cupboards within the unit.

Odour emissions from the stacks have the potential to result in impacts at sensitive locations in the vicinity of the site. As such, an Odour Assessment was undertaken in order to determine baseline conditions and evaulate potential effects.

Dispersion modelling was undertaken in order to predict odour concentrations at sensitive locations as a result of emissions from the stacks. The results indicated that odour levels were below the relevant benchmark level at all receptors and impacts were predicted to be **not significant** in all cases, in accordance with the IAQM guidance criteria.

Based on the assessment results, odour emissions from the proposed extract flues are not considered to represent a constraint to consent for the application.



Legend

Site Boundary

Title

Figure 1 - Site Location Plan

Project

Odour Assessment
Corsham Science Park

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Legend

- Building
- Point Source
- Output Grid

Title

Figure 2 - ADMS-6 Inputs

Project

Odour Assessment
Corsham Science Park

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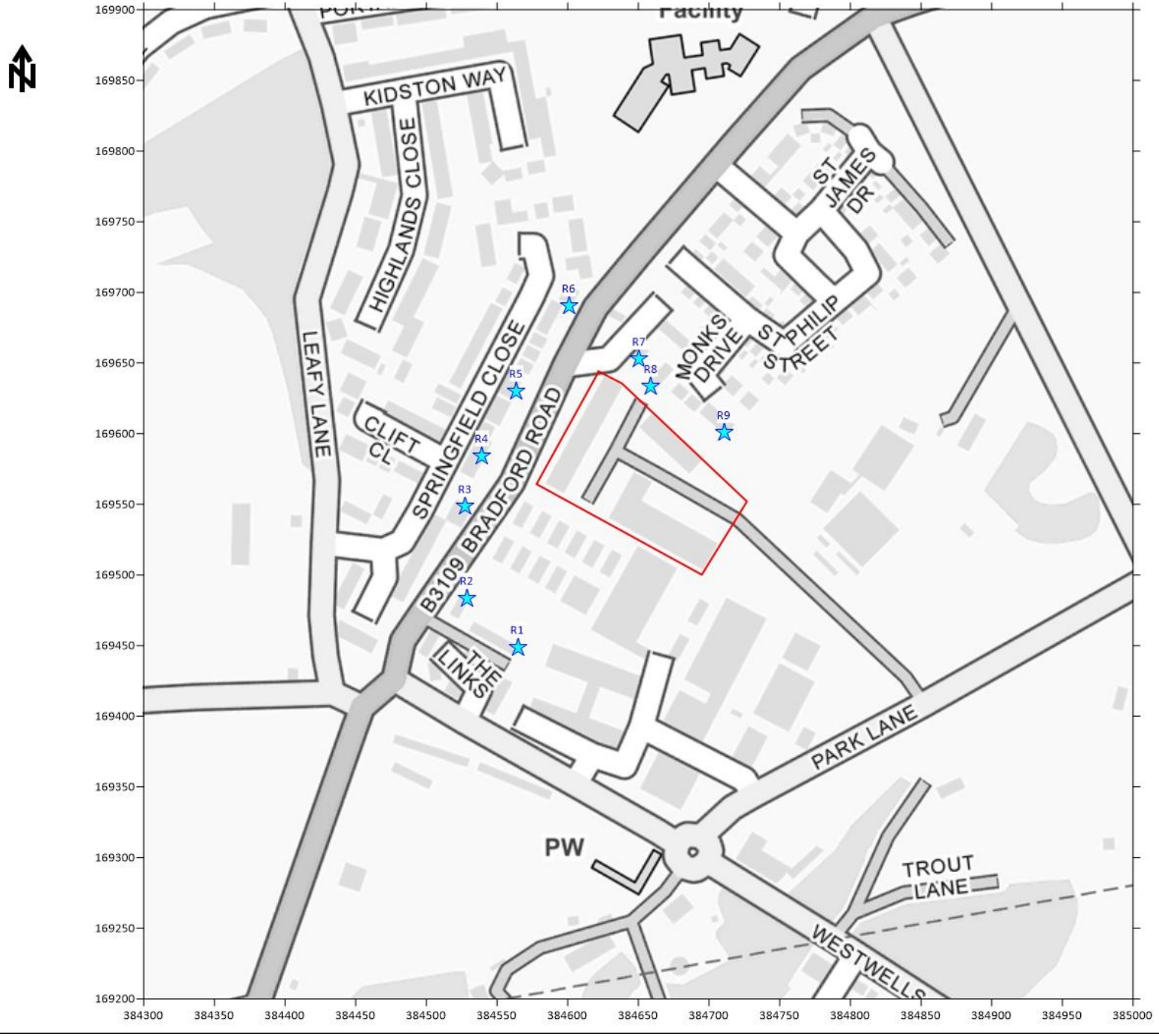

Legend

Site Boundary

Sensitive Receptor

Title

Figure 3 - Sensitive Receptor Locations

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Corsham Science Park

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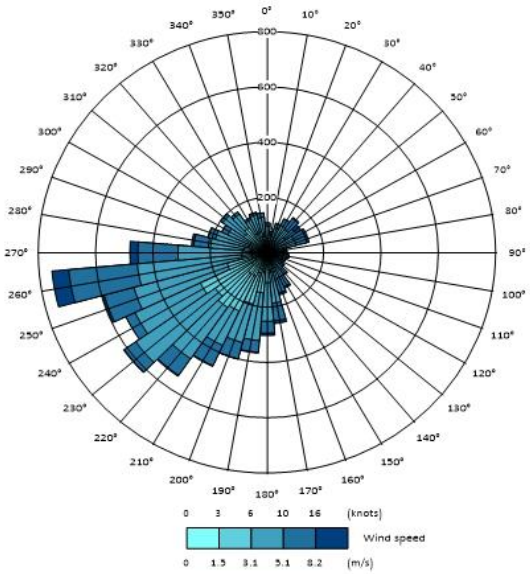

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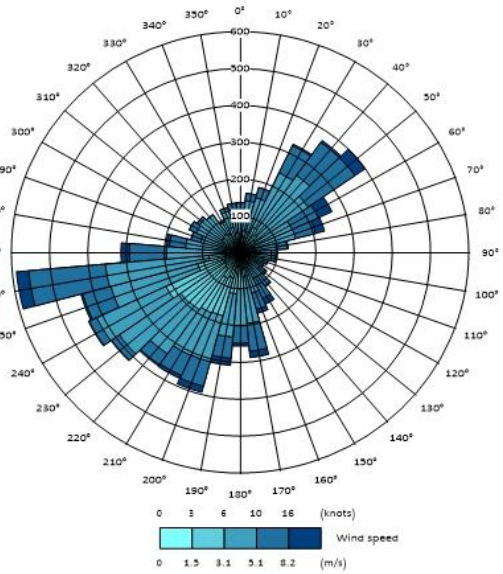
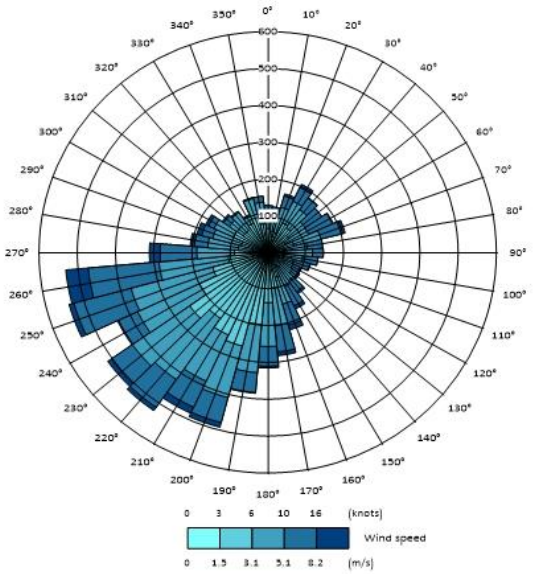
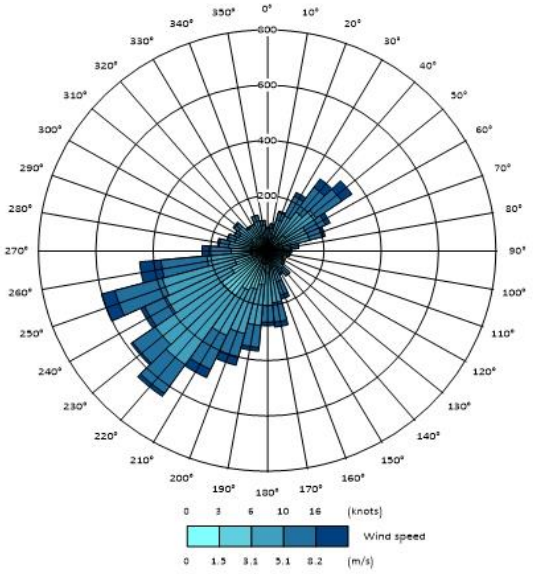


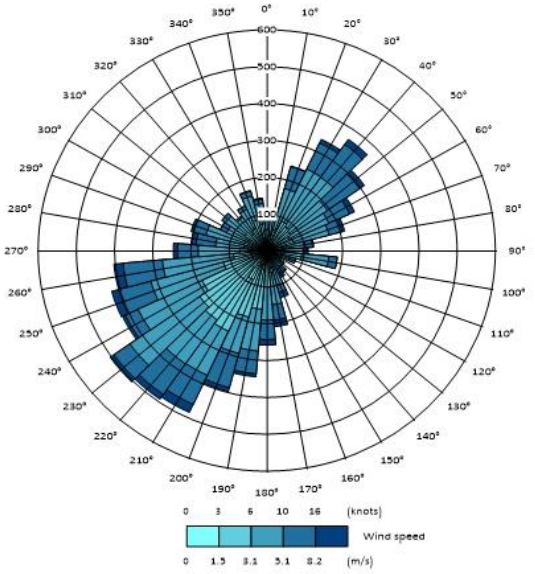
2018 Meteorological Data



2019 Meteorological Data



2020 Meteorological Data



2021 Meteorological Data

Legend

Title

Figure 4 - Wind Roses of 2017 to 2021
Lyneham Meteorological Data

Project

Odour Assessment
Corsham Science Park